Marine Riparian: Assessing Riparian Functions in Marine Ecosystems

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Extended Abstract

The marine nearshore, and estuaries in particular, provide some of the most productive and economically important ecosystems in the world. Despite being resource-rich and economically important ecosystems, the structure, functions and processes that form and maintain habitat in nearshore environments are not well understood. Of the many habitat elements comprising the nearshore, perhaps the least understood and most unappreciated, in terms of critical functions, is the riparian zone. Freshwater riparian areas have been studied intensively in recent years because of their critical habitat functions relative to healthy stream ecosystems. Although marine riparian areas have not been subject to the same level of scientific investigation, evidence is mounting that riparian areas serve similar functions regardless of the salinity of the water bodies they border. We hypothesize that marine riparian zones serve similar functions to those described for freshwater systems and are likely to provide additional functions unique to nearshore ecosystems. In this paper we provide a review of riparian functions as they relate to the marine environment, using the most commonly reviewed freshwater riparian function topics as a template. The functions and values reviewed for this study include: Water quality, soil stability, sediment control, wildlife habitat, microclimate, organic/nutrient input, habitat structure, and shade. Human health and safety and aesthetic values are also reviewed. Furthermore, we provide a brief review and discussion of regulatory and management issues surrounding shoreline and resource management. We place a particular emphasis and focus on the Puget Sound nearshore due to the recent Endangered Species Act listings of several salmonids and the loss of habitat and ecosystem functions resulting from burgeoning human population growth and development practices in the Puget Sound region. Results of this study tend to support our hypothesis, but reveal the lack of adequate levels of quantifiable data to develop a complete understanding of marine riparian functions and values in Puget Sound. Despite the paucity of data, the loss of riparian vegetation indicates a loss of ecosystem processes, structure and functions, which are critical for maintaining healthy nearshore biotic communities. Recommendations are made for additional studies and conservation measures to better understand, preserve, protect, and enhance marine riparian systems.

(Note: The full manuscript for this study is being submitted to a scientific journal for publication. Puget Sound Water Quality Action Team will be notified of the journal name and anticipated publication date when the manuscript is accepted for publication.)